



US006628586B1

(12) **United States Patent**  
Senshu

(10) **Patent No.:** US 6,628,586 B1  
(45) **Date of Patent:** Sep. 30, 2003

(54) **OPTICAL DISK AND RECORDING AND/OR REPRODUCING APPARATUS AND METHOD**

(75) **Inventor:** Susumu Senshu, Kanagawa (JP)

(73) **Assignee:** Sony Corporation, Tokyo (JP)

(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 396 days.

(21) **Appl. No.:** 09/712,839

(22) **Filed:** Nov. 15, 2000

(30) **Foreign Application Priority Data**

Nov. 22, 1999 (JP) ..... 11-331892

(51) **Int. Cl.<sup>7</sup>** ..... G11B 7/00

(52) **U.S. Cl.** ..... 369/47.22; 369/59.21

(58) **Field of Search** ..... 369/44.13, 275.3,  
369/47.27, 47.28, 47.22, 59.21

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,148,422 A \* 9/1992 Sako et al. .... 369/44.26  
6,088,307 A \* 7/2000 Fushimi et al. .... 369/44.13  
6,167,022 A \* 12/2000 Ishida et al. .... 369/44.13

\* cited by examiner

*Primary Examiner*—Nabil Hindi

(74) *Attorney, Agent, or Firm*—Oblon, Spivak, McClelland, Maier & Neustadt, P.C.

(57) **ABSTRACT**

When the optical disk is at a high density, the presence of a defect of the same size can produce a great effect on data in the user data area and ID in the address area. The ID detector 23 detects the address data ID following the address marks AM stored in the address area of the optical disk 10, samples the ID following the address marks AM by using the data clock corresponding to the frequency of the wobble signals detected by the signal detector 22 to obtain ID information.

**9 Claims, 9 Drawing Sheets**

